

# MAST® Culture Media and Supplements

## Technical Information Sheet

**Product Code DM 211**



## Simmons Citrate Agar

For the differentiation of the *Enterobacteriaceae* based on citrate utilisation.

### 1. Description

MAST Simmons Citrate Agar can be regarded as a solidified form of Koser Citrate Medium (DM139), recommended for the differentiation of the *Enterobacteriaceae*.<sup>1-3</sup> The basis of the medium originally proposed by Koser,<sup>4</sup> was that faecal coliforms were unable to grow in a medium containing inorganic ammonium salts as the only source of nitrogen, with citrate as the sole

carbon source. If large inocula were employed, the results in Koser's medium were difficult to elucidate and this prompted Simmons<sup>5</sup> to develop a solid medium, obviating the disadvantage of turbidity as the growth indicator. As with Koser Citrate, care must be taken to exclude all extraneous sources of carbon and nitrogen such as cotton wool plugs etc.

### 2. Technical Formula\*

Formula	grams per litre
Magnesium sulphate	0.2
Ammonium dihydrogen phosphate	0.2
Tri-sodium citrate	2.5
Bromo-thymol blue	0.080
Sodium ammonium phosphate	0.8
Sodium chloride	5.0
Agar	14.0
<b>pH approx.6.9</b>	

### 3. Directions

1. Suspend by swirling 22.8g of powder in 1 litre or the contents of the sachet in the stated volume of distilled or deionised water.
2. Autoclave at 121°C (15 p.s.i.) for 15 minutes.
3. Mix well before pouring.

#### 4. In Use

Inoculate the surface of the medium by streaking with a straight wire. If slopes are used, also stab the butt. Incubate for 48 hours at 37°C.

Some members of the *Salmonella*, *Klebsiella*, *Serratia* and *Citrobacter* groups utilise citrate, as seen by their ability to grow and change the medium from green to blue.

Organisms such as *E.coli*, shigellae, *S.typhi* and *S.paratyphi* cannot utilise citrate as the sole carbon source and do not grow on the medium.

#### 5. References

1. Ewing WH, Edwards PR. *Int Bull Bact Nomen and Taxon*. 1960; **10**: 1-2.
2. Ewing WH, Edwards PR. *Identification of Enterobacteriaceae* 1972; 3rd Edition. Burgess Pub. Co.
3. Ewing WH, Martin WH. *Manual of Clinical Microbiology*. 1974; 2nd Edition. Linette EH. *et al* 189-2121
4. Koser SA. *J Bacteriol*. 1923; **8**: 493-520.
5. Simmons JS. *J Infect Dis*. 1926; **39**: 209 214



**Mast Group Ltd.**  
Mast House, Derby Road, Bootle  
Liverpool, Merseyside, L20 1EA  
United Kingdom  
Tel: + 44 (0) 151 472 1444  
Fax: + 44 (0) 151 944 1332  
email: sales@mastgrp.com  
Web: www.mastgrp.com

**Mast Diagnostica GmbH**  
Feldstrasse 20  
DE-23858 Reinfeld  
Germany  
Tel: + 49 (0) 4533 2007 0  
Fax: + 49 (0) 4533 2007 68  
email: mast@mast-diagnostica.de  
Web: www.mastgrp.com

**Mast Diagnostic**  
12 rue Jean-Jacques Mention  
CS91106, 80011 Amiens, CEDEX 1  
France  
Tél: + 33 (0) 3 22 80 80 67  
Fax: + 33 (0) 3 22 80 99 22  
email: info@mast-diagnostic.fr  
Web: www.mastgrp.com

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\*Formulation may be modified to meet performance criteria

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